MR. A. TEASDALE,
General Superintendent, Manchester Baths,
President, National Association Bath Superintendents.

Public Baths and Wash-houses.

Finance, Construction, Filtration and Lighting: Some Recent Notable Examples.

BY THE EDITOR.

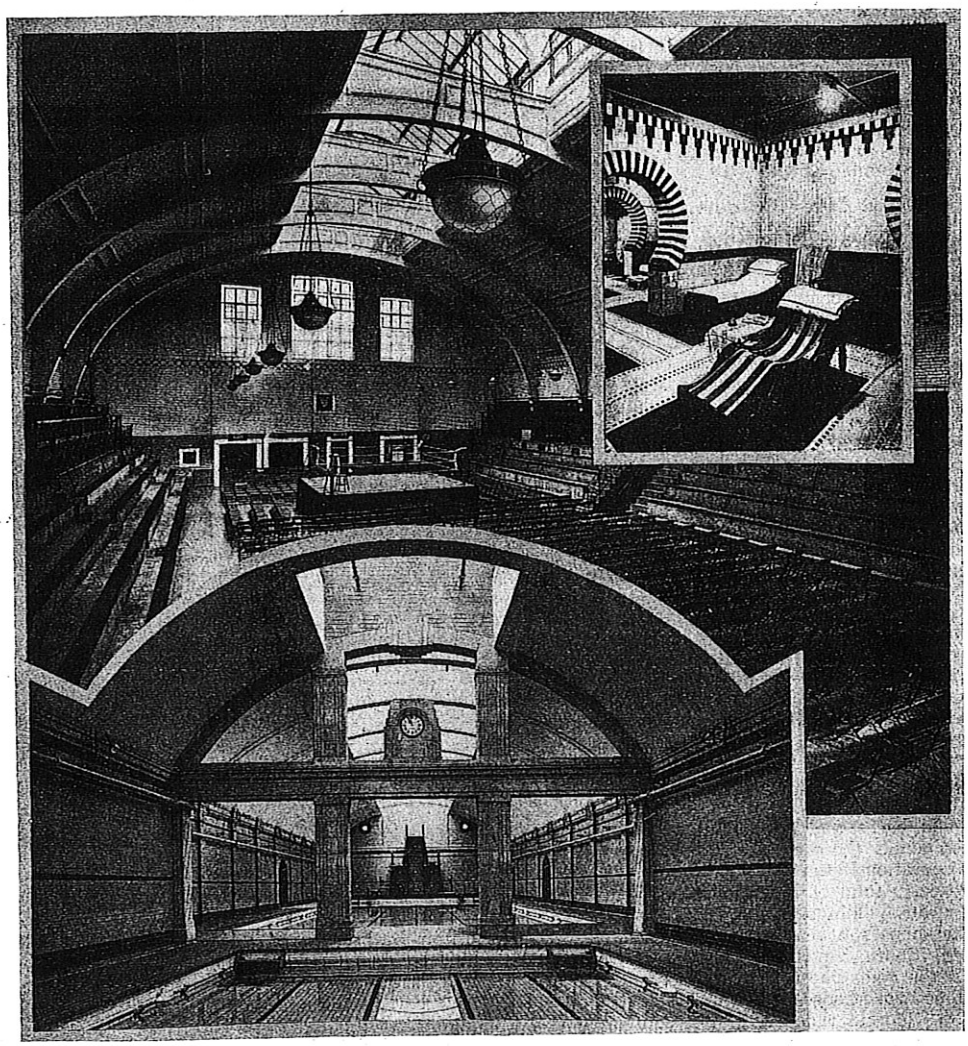
PROBABLY, there is not one in a hundred of the citizens of this country who, for five minutes on end, has reflected on the part which our public baths play in keeping life clean and wholesome. And yet their importance is obvious to everyone concerned with public health. Even the financial aspects of our system of baths and wash-houses fail to gain the attention which their compass demands. This tendency to neglect the plain, obvious, and necessary things, is known to every student of the human mind. It arises from the simple fact that what is familiar has lost its capacity for causing surprise. By no other explanation can we account for the way in which the public baths service falls behind in its claims for recognition.

That those claims are considerable is shown by reference to the Annual Taxation Returns. In a year the County Boroughs, Boroughs, Metropolitan Boroughs and Urban Districts of England and Wales spend about one and a half millions on the maintenance of the baths and wash-houses in their control. Their total expenditure, which includes disbursements on loan account, is in the neighbourhood of two millions. Their income, in 1929 for example, was nearly £950,000, an amount which is almost the same as the sum by which the baths of this country increase the rates levied on the occupiers. In the current year it is not improbable that baths and wash-houses will incur a charge to the rates of about one million. But that is not a loss. Socially, that expenditure is every penny in terms of gain. If the official figures are studied, the small extent of the burden in proportion to rateable value must impress the inquirer—1.5d. in County Boroughs, 1.3d. Metropolitan Boroughs, 0.7d. in Non-county Boroughs, and 0.9d. in Urban Districts.

Recent variations in financial policy notwithstanding, progress still continues in the world of baths as a whole. In 1930-31 loans sanctioned by the Ministry of Health for public baths and wash-houses, including open-air baths, amounted to £1,108,000. Among the larger schemes for covered baths in recent years are those at Derby, Birmingham, Leeds, Bristol and Doncaster. In most cases, so popular has swimming become, it is now the rule to make the large swimming pool about 105 ft. by 35 ft., or even larger. Generally, the provision of wash-houses does not proceed so rapidly—at Leeds alone of the towns enumerated was this necessary aid to the working-class home introduced. One of the most notable recent additions to baths undertakings is that of the Westminster City Council at Marshall Street, erected at a cost of £150,000; while several other of the London boroughs have also greatly extended their service. Likewise, movement in favour of the purification of swimming baths water is now reflected in the wider provision of plant for continuous filtration, chlorination and aeration.

Promotion of Cleanliness.

In that almost forgotten novel, *Alton Locke*, by Charles Kingsley, the combative Rector of Eversley maintained that Englishmen in his day were so conservative in the management of towns that cholera epidemics were required to convince them of the need for the conscious promotion of cleanliness. The story of the development of public baths and wash-houses gives support to Kingsley's view. It was in 1832 when cholera was raging, more especially among the Irish in Liverpool, that Mrs. Kitty Wilkinson initiated the movement that was crowned with success



BIRMINGHAM CORPORATION BATHS, (Page 639.)

MR. E. W. PRIESTLEY,
Superintendent, Newcastle-on-Tyne Corporation Baths.

when Parliament passed the first of the Adoptive Acts, the Public Baths and Wash-houses Act of 1846.

When the cholera ravaged the great seaport tens of thousands of its inhabitants lived in cellar dwellings, in circumstances where but little could be done to prevent the spread of the infection. But that little possible was commenced by Mrs. Wilkinson, the wife of a labourer, of Frederick Street, Liverpool. Living in a crowded street she encouraged her neighbours to wash their clothes in her own back kitchen, and to dry them in the covered passage of her back yard. A few weeks after she began her experiment a district provident society came to her aid, and before six months had passed the washing for 85 families was carried out in her humble abode.

Separated Establishments.

It was about that time that Mr. and Mrs. William Rathbone, whose successors are still honoured in Liverpool, gave to Mrs. Wilkinson that support which finally induced the Corporation of Liverpool to undertake the provision of public baths and wash-houses. A site was obtained in Upper Frederick Street, and in May, 1842, the first public baths and wash-house in this country was opened. With the passing of the Baths and Wash-houses Act the Liverpool Corporation resolved to borrow £25,000. Five sites were obtained, and in 1849 the plans for the Cornwallis Street bath were approved. Twenty-one baths and wash-houses are now under the control of the committee, and in the course of a year their total income amounts to rather more than £28,000; the total expenditure being £82,000.

As every student of administration is aware, in almost every department of local government there is a spirit of emulation in the relations between Liverpool and Manchester. This is true in regard to the administration of the baths and wash-houses, as of many other forms of communal activity. On March 31, 1931, 20 public baths and 15 public wash-houses were under the control of the Manchester Corporation Baths and Wash-houses Committee, a total of 35 establishments in 22 separate buildings. Since that date public wash-houses have been opened at Mossside, South Street, Workesleigh Street, Clayton and Cheetham, the demand for public wash-houses in Manchester being more vigorous than ever. The equipment of the Manchester establishments runs into large figures. There are 32 swimming baths, with 1,565 dressing-boxes; 816 wash baths, 15 vapour baths, four Turkish and two Russian baths. The extent of the machinery in the wash-houses indicates, in some small degree, the vast labour which is borne by Manchester's women in their efforts to keep clean the population of that smoky city. In the wash-houses are about 700 wash stalls, 552 drying horses, 25 rotary washing machines, 57 steam driven and electrically driven mangles, 23 steam driven and 50 electrically driven hydro-extractors with innumerable ironing stoves, irons and other items of equipment essential for the washing process.

Publicity Phrases.

One special feature attaching to the Manchester baths is the general excellence of the publicity announcements for which Mr. A. Teasdale, the General Superintendent, is responsible. There are before us, for example, certain handbills indicating the conditions on which free tickets are presented to members of the police force and fire brigade who win proficiency certificates from the Royal Life-saving Society. The regulations for mixed bathing, which has achieved so remarkable a success in Manchester, are couched in phrases that the most indolent reader can understand, while a really capital pronouncement on behalf of the wash-houses is headed "Good News for the Housewife." Incidentally, this excellent publicity draws attention to the fact that the Corporation of Manchester is an instructor of swimming on a most extensive scale. In blue and red, on a plain white ground, the citizen of that city is invited to learn "all kinds of strokes," as taught by very experienced instructors, male and female. For ten lessons the charge to adults is one guinea, whilst the junior, who is generally an earlier adept in the water, is offered five lessons for the modest sum of 7s. 6d.

Beside the existing baths at Manchester another is being erected at New Moston which, it is anticipated, will be opened this month. Among the recent extensions of the Manchester system were the Chorlton Baths, opened towards the end of 1929, and the Levenshulme Baths, in June of last year. At Chorlton-cum-Hardy the baths buildings contain two swimming baths—the males' bath 75 ft. by 30 ft.; the females' bath 75 ft. by 25 ft., with ample footbath accommodation. There are 14 wash-baths (seven for males, seven for females), Turkish baths, comprising cooling room, three hot rooms, shampoo and douche room, Russian bath and boot room. A plant, capable of circulating and treating 19,350 gallons of water per hour, enables the water in both swimming ponds to be filtered, ærated and chlorinated once every four hours. This was the first chlorinating plant to be installed in Manchester.

The Levenshulme Baths also embraced two swimming baths, with 28 wash-baths. Rather less than at Chorlton, the males' swimming bath is 75 ft. by 25 ft., with 56 dressing-boxes. The females' bath is 60 ft. by 20 ft., with 38 dressing-boxes. Here, again, a filtering, ærating and chlorinating plant deals with about 20,000 gallons of water. In place of the old type turnstiles a gate and rail has been fixed, while an electrical cash registering machine for the issue of tickets has been a source of sound economy.

Adjoining the new building is the public wash-house, opened on October 10, 1921, and containing 32 washing stalls, 32 drying horses, three hydro extractors, three electrically driven mangles, ironing stove, irons, etc., in addition to a Lancashire boiler, 16 ft. by 7 ft. 6 in., supplying hot and cold water and steam to the whole establishment.

As at Chorlton, the Levenshulme Baths were erected from designs prepared by the City Architect, Mr. Henry Price, A.R.I.B.A. In both cases the engineering work was carried out under Mr. A. Teasdale's supervision. It may be added that all the swimming baths of the Manchester Corporation are installed with filtering, ærating and chlorinating apparatus supplied by Messrs. Royles, Ltd., Irlam, and Bell Bros., Ltd., of Denton.

Glasgow Establishments.

In *The Municipal Journal* for November 12, 1926, there appeared an exhaustive article on the Glasgow Corporation's public baths and wash-houses. The first public wash-house was erected in 1742. Then the population of the Clyde-side township was only 28,000. Hot water was issued from its copper boiler at 1d. per pail, and wooden bines (which the English call tubs) were loaned at a charge of 3d. daily, or 2d. for half the working day. Mechanical appliances, it is worthy of record, were first introduced

LEVENSHULME BATHS, MANCHESTER, SHOWING COLLAPSIBLE DRESSING BOXES.

in the Glasgow wash-houses in 1878. In 27 establishments now under the Corporation's control there are 2⅓ million bathers in a year, while 1,370,000 washers use the facilities which the wash-houses afford. Private wash baths available for males and females number 781 in the whole of the baths establishments. Receipts for the collective undertaking amount to (1930-31) £77,800, while the expenditure in that year was £160,000. That deficit is probably spent more wisely than any other equal sum of money which Glasgow's city fathers husband so carefully. Under Mr. R. B. Thomson's general managership, the service has expanded in recent years, among its latest additions being the Pollokshaws baths and wash-house (the third establishment opened of the five promised under the Extension of Boundaries Act, 1925), and the buildings at Shettleston which serve that district and Tollcross (the fourth erected under the Act).

Progress at Greenwich.

Among the more notable buildings of the type we consider, opened recently, are the baths at Greenwich, where Mr. A. E. Read exercises his administrative skill as Superintendent Engineer. Erected in 1850-51 at a cost of £13,000, the baths and wash-houses in London Street, Greenwich, were among the first to be built after the Adoptive Act of 1846. Extended from time to time, by 1921 the Council decided that the London Street Baths were obsolete, and a site in Trafalgar Road was purchased from the Greenwich Hospital Estates for £4,300. Eventually, the plans submitted by Messrs. Horth and Andrew, Architects, Hull, were adopted, and Messrs. Holliday and Greenwood, Ltd., Buckingham Palace Gardens, S.W., were the contractors for the sum of £121,908.

In every respect the new building may be regarded as the latest word in baths construction. The area of the site is one and a quarter acres, with frontages of 240 ft. to Trafalgar Road, 212 ft. to Park Street, and 220 ft. to Creed Place. The three swimming baths are fitted with an up-to-date filtration plant installed by the Paterson Engineering Co., which is among the plants with the largest turnover per hour in the United Kingdom. The sizes and capacities of the baths are: First class bath: 100 ft. by 40 ft. by 3 ft. by 7 ft. 6 in., 131,250 galls. capacity; second class bath: 80 ft. by 40 ft. by 3 ft. by 6 ft. 6 in., 74,800 galls. capacity; ladies' bath: 70 ft. by 36 ft. by 3 ft. by 6 ft. 6 in., 95,000 galls. capacity.

The supply of water is taken from the Metropolitan Water Board, and has a hardness of 18 deg. To prevent the formation of scale and the consequent furring-up of pipes, a Paterson's water softening plant was added to the engineering equipment near the end of 1929. This is of the Basex type, and has a maximum capacity of softening 2,000 gallons per hour, with 10,000 gallons between regenerations.

Drying Apparatus.

The public wash-house contains twenty-eight washing stalls, each fitted with washing and rinsing troughs, and boiling copper, thirty-two drying horses and four washing machines, and five self-contained electric motor-driven hydros. The drying horses are heated by forced draught through steam heaters, which ensures a constant supply of hot dry air passing from the top of the horses, through the clothes. The heavy moist air passes through special ducts to the atmosphere; this system allows the clothes to dry more rapidly than would be the case if passed from the bottom of the horses. A steam heater is provided so that the washers may make their own starch, or may use the boiling water for the making of tea.

The provision of these wash-houses has supplied an urgent want, and from their inception the number of persons using them has steadily increased. During the year ending March 31, 1932, 20,631 washers attended. The charges are amongst the cheapest in the country —1½d. per hour for the first two hours and 2d. per hour afterwards. For the use of the washing machines, 1s. per hour is charged.

The swimming baths have been exceptionally popular. The Adoptive Acts Committee very wisely resolved to allow mixed bathing at any time in the first class bath. The demand for dressing accommodation was soon so great that during last season seventy-two additional collapsible dressing cubicles were erected in the balcony. These quickly justified their provision and greatly relieved the congestion, besides providing privacy and security for the bather's belongings. Last year 165,814 persons used the swimming bath. The slipper baths were used by 75,656 during the same period.

It was the view of the Adoptive Acts Committee that a modern establishment was not complete without either Turkish, Russian or medicated baths. Certain rooms were therefore converted and arranged to form a set of vapour baths. As existing rooms had to be used, it was not possible to have the vapour rooms on a large scale, but the whole project was admirably carried out, and is capable of accommodating twenty bathers per hour. The baths comprise one waiting-room, one dressing-room with eight cubicles. Each cubicle has a self-contained sanitary and self-locking galvanised steel locker, in which the bathers place their clothes and retain the key during the bath. The locker is taken from the cubicle by the attendant and placed in an adjoining room, thus allowing the cubicle to be used again and not simply as a container for clothes.

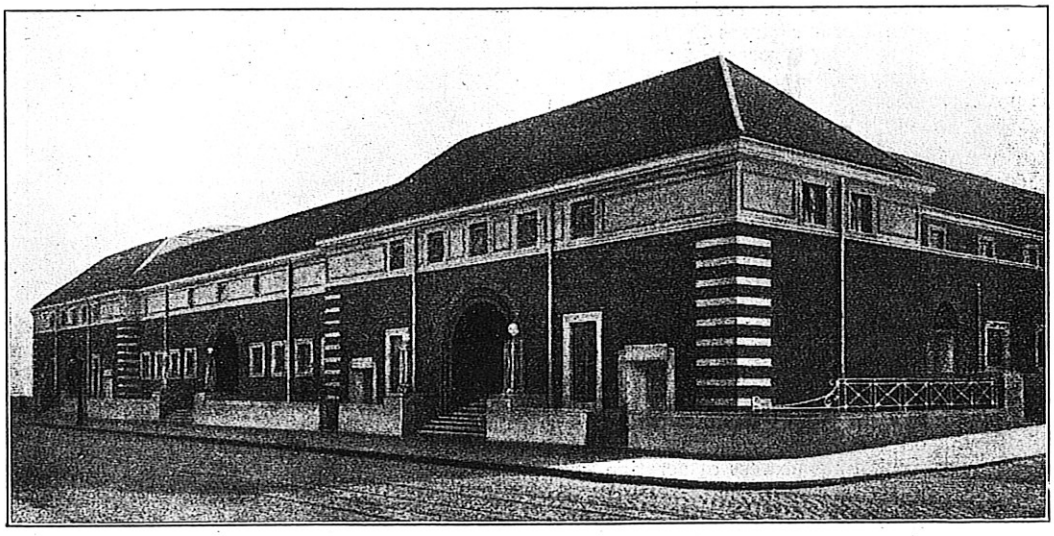
MR. CHAS. BURGESS,
General Superintendent, Baths, Leeds.

The agenda for the meeting of the Greenwich Borough Council on October 21, 1931, gave the financial result of the year's working up to the end of March. Expenditure, including £11,500 on loans repayment and interest and £1,400 on capital charged to revenue, amounted to £22,500. On the income side of the statement, there was a deficiency of £15,700—a rate of 3½d. in the pound of the borough's rateable value. That expense to the ratepayers as a whole is a fruitful investment in good health and beneficial recreation.

The construction of the Greenwich Baths was carried out by the following:—

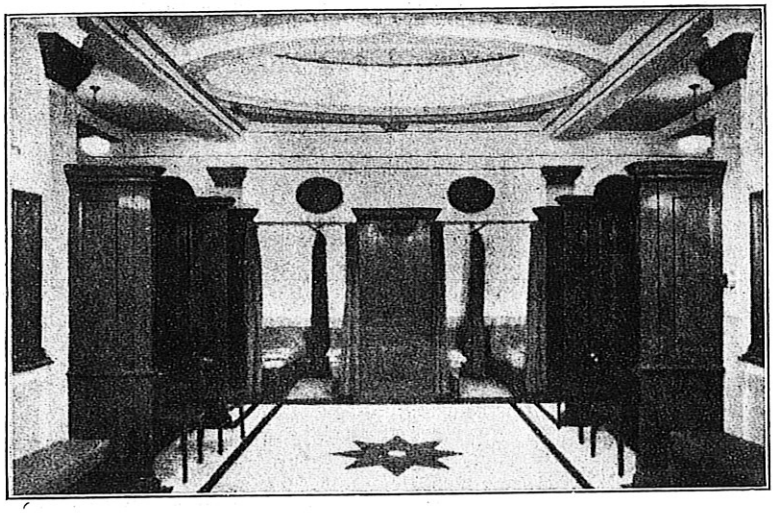
CONTRACTORS: Holliday and Greenwood, Ltd., 11, Buckingham Palace Gardens, S.W.

SUB-CONTRACTORS: Washhouse and laundry equipment, Manlove, Alliott and Co., Ltd., Nottingham; filtration plant, Paterson Engineering Co., Ltd., London; heating and ventilation, Rosser and Russell, Ltd., London; boilers, Spurr, Inman and Co., Ltd., Wakefield; economiser, E. Green and Son, Ltd., London; reinforcement in floors and pools, Expanded Metal Co., Ltd., London; constructional steelwork, Lambhill Ironworks, Ltd., London; pre-cast flats, Concrete, Ltd., London; granolithic floors, A. C. W. Hobman and Co., Ltd., London; asphalt, Ragusa Asphalte Co., Ltd., London; facing bricks, A. Bolton and Co., Ltd.,



PUBLIC BATHS, TRAFALGAR ROAD, GREENWICH.

pswich; roof tiling, Roberts, Adlard and Co., London; ironmongery, Waltho and Co., Ltd., Wolverhampton; floor door springs, Robert Adams, London; sanitary fittings, B. Finch and Co., Ltd., London; fire escape stairs, F. A. Norris and Co., Ltd., London; fire-resisting glazing, British Luxfer Prism Syndicate, Ltd., London; terrazzo, Art Pavements and Decorations, Ltd., London; steel casements and sashes, Henry Hope and Sons, Ltd., London; electrical installation, Alliance Electrical Co., Ltd., London; electrical fittings and stage lighting equipment, the General Electric Co., Ltd., London; wall tiling, Bell and Co., Ltd., Northampton; mixing valves, Gummer and Co., Ltd., Rotherham; clocks and telephones, Arthur Lyon and Co., London; tip-up seats and mirrors, Turner and Co., Ltd., Birmingham; chairs, Lazarus and Co., Ltd., London, and Benjm. Goodearl and Sons, High Wycombe; diving platforms, Hayward and Co., Ltd., London; dressing-box grilles, G. A. Harvey and Co., Ltd., London; lamp standards. Gillham and Jones, London; bronze tablet, Martyn and Co., Ltd., Cheltenham.



FRIGIDARIUM, NEWCASTLE-ON-TYNE BATHS. (Page 638.)

Filtration Systems.

At this stage it is appropriate we should refer to other extensive filtration plants. In the Hornsey Road Baths, Islington, a filtration plant installed by Bell Bros., Manchester, consists of eight 8 ft. diameter filters, which deal with the water in four ponds at the rate of 100,000 gallons hourly. At the Hackney Baths there is also a plant by Messrs. Bell dealing with 89,000 gallons hourly from three ponds, and at Bethnal Green a plant of six 8 ft. diameter filters, which deals with two ponds to the extent of 72,000 gallons per hour. At Manchester the three latest baths to be equipped in that city have each been installed with "Bell" plants, while the chemical apparatus marketed by that firm has also been applied in connection with the existing plants in eight other baths under the control of the Manchester Corporation. Glasgow, Birmingham, Stoke-on-Trent, and several councils in the London area, in addition to those already mentioned, are among the bath and wash-house authorities which have had recourse to Messrs. Bell Brothers' services.

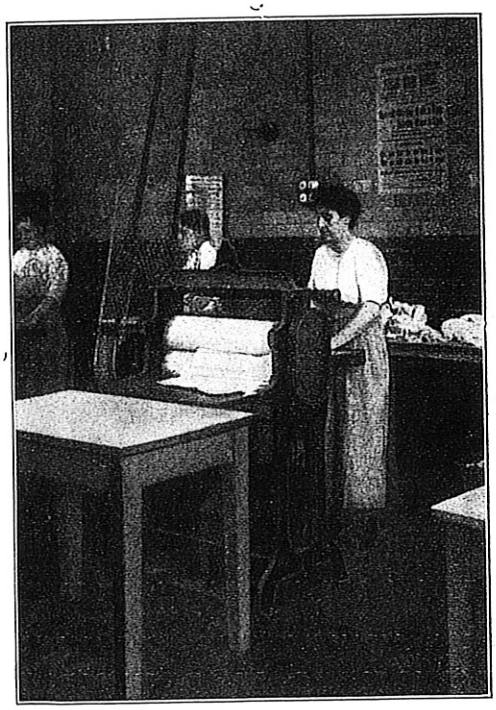
Reference should be made to the open-air swimming bath at Wembley as among the more conspicuous recent contributions. Here the scheme comprises a swimming pool with a capacity of about 400,000 gallons, 165 ft. in length and 75 ft. wide, the depth varying from 3 ft. 6 in at the centre of the shallow end, to 9 ft. at 17 ft. from the diving stage. Accommodation is for 180 bathers—120 male, 60 female, though the proportion of boxes allocated to each sex can be varied by portable barriers. The Candy Filter Co, Ltd., Hanwell, secured the contract for the supply and erection of filtration plant which is designed to circulate the water at the rate of 90,000 gallons per hour. The whole of the water in the bath can therefore be dealt with once in every four hours. Two horizontal type filters, 30 ft. by 8 ft. diameter, give a total area of 400 sq. ft. with a filtration ratio of 240 gallons hourly. Pressure through the filter is by a Gwynne centrifugal pump, with 12 in. suction and 10 in. delivery, the h.p. absorbed being thirteen for dirty water and eight when clear. Water is drawn from the deep end through a fine screen to a sump, and then passed through the filters. By the automatic addition of specified quantities of alumina ferric and soda ash solution the process of filtration is assisted. Sterilisation is by chlorine gas. After aeration the passage back is by a blower over a cascade at the shallow end of the bath. An air compressor cleanses the filters when dirty, the process taking about thirty minutes. About 15,000 gallons of new water is required in compensation for washing, which is necessary once in thirty-six hours. It may be added that the floor of the bath is kept free from dirt by a suction sweeper, an ingenious apparatus working on the same principle as a vacuum cleaner, but utilising water for purposes of suction instead of air.

Two methods are available to restore the organic and bacteriological purity of bath water, (1) the adoption of bacteria retaining filters, and (2) the destruction of soluble organic matter and suspended solids by a process of aeration, precipitation and rapid filtering, followed by sterilisation. Messrs. Royles, Ltd., claim to have introduced the latter method about thirty years ago. Their first complete plant was installed at the Bury Corporation Baths in 1905, and at the present time it still functions well. Many improvements have been effected since that time, and about 170 installations are now in use in the public baths of Great Britain, including such considerable installations as at Salford (1931), Sheffield and Bournemouth (1930), and Nottingham, Edinburgh and Farnworth (1929). The guarantees which cover Messrs. Royles' plant are placed at high levels. Clarity under normal light, with an absence of colour, odour, and visible suspended matter are assured by the Royles' method. From many quarters where the system has had long trial, municipal authorities report that its advantages are not only in the economy of water. The superior cleanliness of person and habit which is inculcated by clean water in the public swimming bath, is a social asset greatly valued by every Medical Officer of Health. In the Royles' system emphasis is laid on the importance of correct and ample aeration, and on that score attention should be given to the open and enclosed aeration plants which are described in detail in the firm's admirable publicity literature.

Leeds Enterprise.

We turn to Leeds, where Mr. Chas. Burgess officiates as General Superintendent. Eight baths and two wash-houses are under the Corporation's control. Extension was the declared policy of the Council until the economy campaign sapped the possibilities of progress. Nevertheless, in the year 1930-31 there were added to the then existing facilities 13 warm baths, 50 washing stalls, 58 drying frames, 10 hydro extractors with the concomitant mechanical washers, power mangles and electric irons. In all departments of the baths, 1,003,500 persons attended, the receipts amounting to £19,700. Rather more than 667,000 persons had recourse to the swimming bath, the Turkish, Russian and ultra-violet ray baths also giving evidence of growing popularity.

A brief history of public baths in Leeds will not be out of place. In 1837, the year in which Queen Victoria ascended the throne, an enterprising body of shareholders decided to mark the event—and, if they could, earn a profit then in the region of speculation only—by erecting a building which comprised a swimming bath, warm baths, vapour and medicated baths—quite an ambitious affair for the time. About £6,000 was spent on the undertaking. Collateral with the opening of this establishment an open-air swimming bath in the Armley district was closed down. For nearly sixty years the



MANGLING APPARATUS, MANCHESTER WASH-HOUSES.

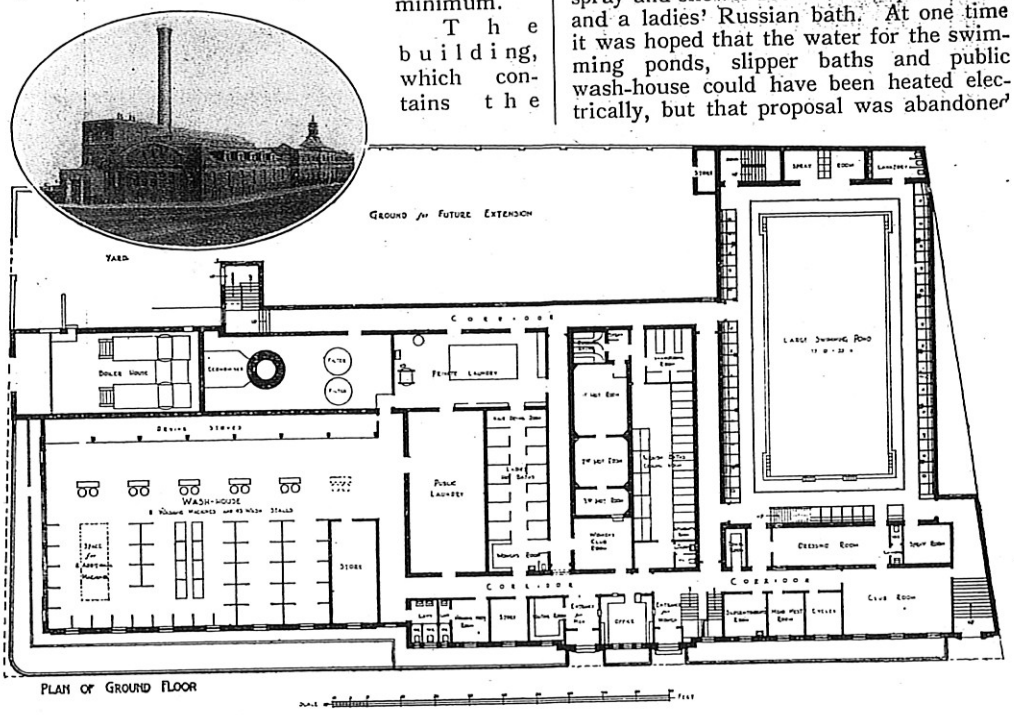
company then had the field for itself, but in 1895 the Leeds Corporation opened the first of its municipal baths. The building in Kirkstall Road dedicated to that purpose was followed by another, the Union Street Baths, opened in August of the same year. Three years later Oriental baths, which the company had erected in 1867, were purchased by the city authority for £13,000.

The first wash-house provided by the Corporation was at Stocks Hill, Holbeck, in 1928; the second was made available so recently as January of last year. Both are popular, the number of washers being about 42,000 annually. It is expected that when the new baths and wash-houses at Armley are completed a large addition to those figures will appear. One very successful feature of the wash-house arrangements is the system of booking in advance, which is now in operation in several towns. At Leeds a washing stall or machine is booked two weeks in advance. An innovation of some importance is the undertaking by which the Tramways Department carries the citizens' washing without charge to and from the public wash-houses. Three of the Leeds elementary schools have their own swimming baths, to which the Baths Department contributes one-half of their cost. With these exceptions, all the swimming baths are open from 9 a.m. to 8 p.m. (Saturdays 9 a.m. to 6 p.m.), and on Sunday mornings, in the summer, for mixed bathing from 8.30 to 10.30 a.m. In the course of the year the swimming baths are open for 912 hours. The means of saving life from drowning is taught on an extensive scale, and many of the scholars who attend the schools in the charge of the Education Committee have gained awards from the Royal Life Saving Society.

It is anticipated that the new baths at Armley will be open by August Bank Holiday. The site has an area of 5,070 sq. yds. Left and right of the ticket office in a spacious entrance hall will be the private warm baths—seven first-class and seven second (for ladies)—the rooms being 6 ft. by 7 ft. The baths for males, of which there are 16, will be heated in the same way. Ventilation has been studied as a special feature throughout the whole of the building, and it is confidently expected that condensation has been reduced to a minimum.

The building, which contains the principal swimming pond (males), is 110 ft. by 70 ft. A second swimming pool is 75 ft. by 45 ft. The ponds are lined with Limmer asphalt and the sides with a white enamel brick having a brown band at the water line. Particular attention has been given to the platforms, and it would seem that the specifications have completely avoided the entrance to the bath of dirt from the bathers' boots and shoes. A balcony, on three sides of the bath, is at an angle which allows the line of vision to strike a point 9 in. from the edge of the bath. As an aid to ventilation a 1 in. copper pipe extends the full length of the swimming bath, perforated every 6 in. with holes. If the building becomes overheated during a gala, the cold water spray thus made possible will filter and cool the air.

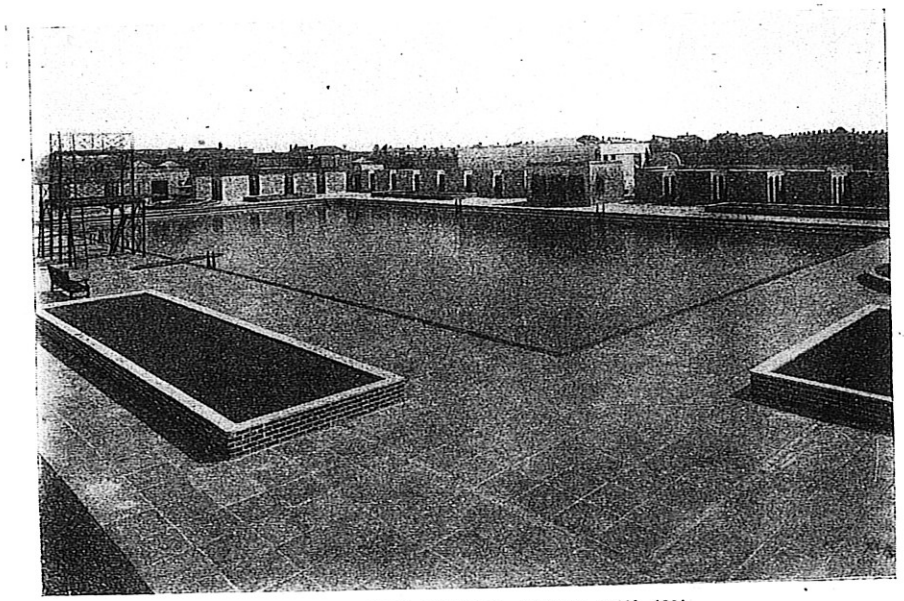
Embraced within the building there is a club-room—an essential when local swimming clubs send their members in considerable numbers—a ladies' small pond, 75 ft. by 30 ft., built on the same lines as the larger bath, a Russian bath with lounge room, 18 dressing cubicles, spray and shower rooms and vapour room, and a ladies' Russian bath. At one time it was hoped that the water for the swimming ponds, slipper baths and public wash-house could have been heated electrically, but that proposal was abandoned on the score of cost. A filtration plant is in the basement.



SHETTLESTON PUBLIC BATHS AND WASH-HOUSE, GLASGOW. PLAN OF ESTABLISHMENT. INSET: BATHS EXTERIOR. (Page 630.)

The new public baths and wash-houses at Armley will cost £66,500. On their completion the Baths and Wash-houses Department of the Leeds Corporation will then comprise 17 swimming baths, of which eight are 75 ft. by 30 ft., one 75 ft. by 36 ft., one 75 ft. by 40 ft., three 63 ft. by 24 ft., one 58 ft. by 33½ ft., and three school baths 45 ft. by 24 ft.; two Turkish baths, seven Russian baths, one vapour bath, 196 warm baths, two sun baths, 130 washing stalls, 216 drying frames, 36 hydro extractors, 33 mechanical washing machines, 18 power mangles, 54 electric irons, nine filtration plants, and 11 Lancashire boilers. In the baths there are 834 dressing cubicles and 156 dual mixing showers.

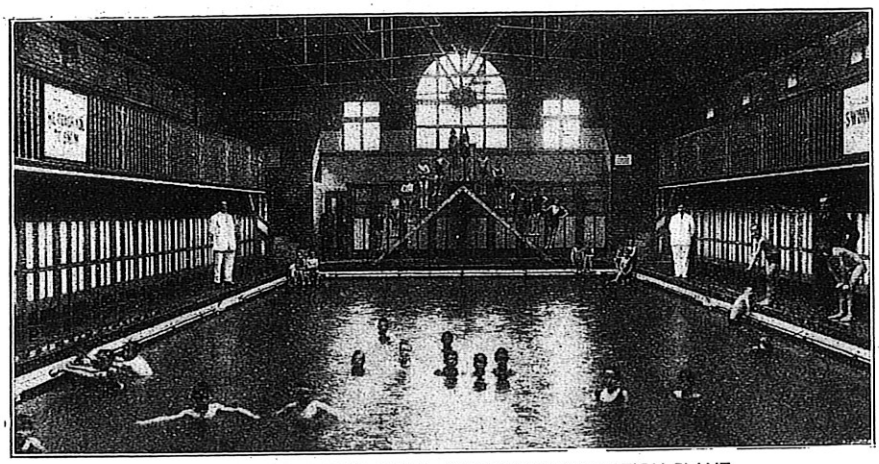
Not a little controversy surrounds the question whether a private laundry is necessary in such an establishment as the Leeds Corporation constructs at Armley. In Mr. Burgess' opinion it is not. One machine in the public laundry can, he contends, be set apart for the washing of towels, and in their spare time the attendants in the public wash-house can do this work. At Manchester, on the other hand, a new Central Establishment Laundry adjoining the Moss Side Baths is now in operation. Here the towels and bathing costumes required for the whole of Manchester's 20 baths are washed and finished, with the result that it has been possible to close the district establishment laundries at Bradford, Harpurhey and at the Victoria Baths. Three motor vans are used for "collection and delivery."



BARKING B.C. OPEN-AIR BATH, OPENED MAY, 1931.

Sunday Bathing.

Sunday mixed bathing has proved very popular at Leeds, where the Committee, in April, 1930, decided to make that experiment. The swimming ponds at the various baths are open for bathing of this class on Sunday mornings from 8 till 10.30, from the second Sunday in May to the last Sunday in October. In the first six months of the venture attendances numbered 33,000, while the receipts



HOLBECK BATHS, LEEDS: PULSOMETER FILTRATION PLANT

ere £776. At Manchester this form of thing is permitted on one half-day in the eek at 10 establishments; 64,000 persons articipated in the course of a year.

At both Leeds and Manchester the ublic Life Saving Classes are an im-rtant part of the activities of the baths ndertaking. At four baths under the rmer authority 260 certificates, medal-ns and awards of merit are issued in months. At Manchester, in 1930-31, 300 persons (seniors and juniors) passed e necessary tests.

As already suggested, among the cilities especially popular in large towns e those which the Baths Authorities ford to swimming clubs. At Manchester, ubs which use the first-class baths must mber at least 30 members, while the oportion of that membership attending e baths on club practice night must not less than 20 in each week. An annual gistration fee of 10s. 6d. is charged to ch club. The prices of admission for ub members from April 1 to March 31 is l. for all baths except the Victoria and horlton, where the charge is 5d. for each rson. Associations using the second-ass baths must embrace a club member-ip which allows for an attendance of 15 ch practice night. In this group the gistration fee is 5s. annually, and the ice of admission from April 1 to arch 31 is 1½d.

At Liverpool 20 persons can consti-te a swimming club, to whose members e first-class bath is available two nights eekly, from April to October, for an in-usive charge of 6s. 6d. In 1930-31, 142 ubs took avail of this arrangement, the evenue from this source being £676. ather more than 51,000 baths were ken under these contracts.

Club Membership.

At Leeds the sport of swimming is couraged in many ways. Clubs hiring a vimming pond one night per week for certain number of consecutive weeks, by greement pay an inclusive fee of 12s. 6d. summer and 10s. in winter, while the tal admissions do not exceed 80 mem-rs, two juniors to count as one member. or each person in excess of this number ½d. per person is charged. The past two ears have seen a great increase in the umber of clubs hiring ponds, until at the nd of the financial year 1931 it was im-ossible to entertain further applications.

Of considerable social importance, lso, are the arrangements made for the ncouragement of school children in their isits to the baths. At certain times each eek the Leeds Baths admit secondary chool children to receive instruction at a harge of 2½d. per person. In the last nancial year the attendance and receipts rom this source were 13,200 and £137 respectively. In co-operation with the Leeds Education Committee excellent work is performed in teaching swimming. For each child attending for instruction the Education Committee pays to the Baths Committee 1½d. per attendance. The attendances and receipts were 148,000 and £923 respectively.

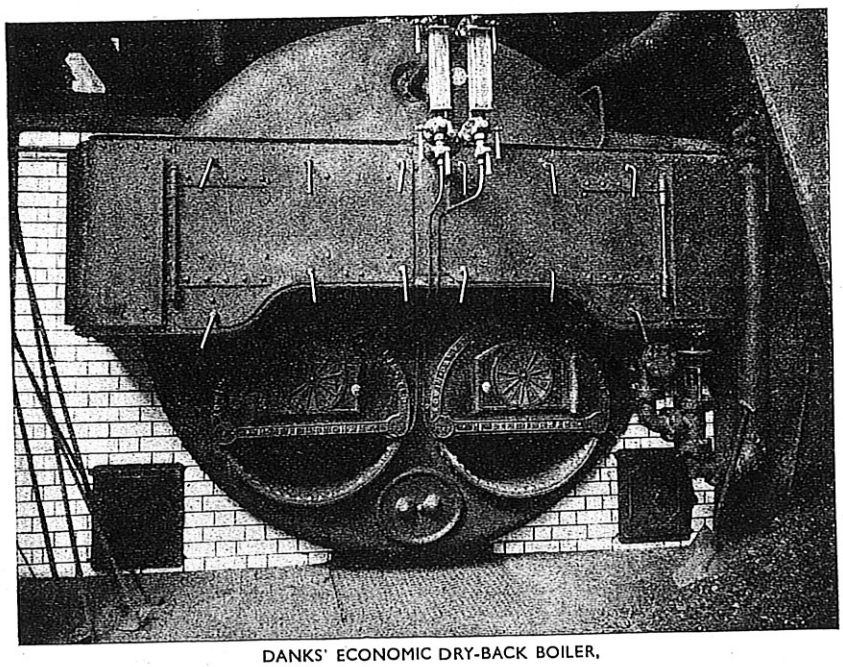
At Newcastle-upon-Tyne the number of school children taking avail of the same class of instruction was 149,000. The baths at Liverpool annually receive about half a million school children sent by the Local Education Authority. Here a system of ½d. tickets for school children is also in vogue, to the extent of about 35,000 annually.

During the summer months the Manchester Corporation invites the school children of that town to free bathing in the second-class swimming bath. Swimming teachers are in attendance, and for the greater part of several days in the week most of the Corporation's baths are available for this purpose. Towels are provided, and the scholars are accompanied by a master or teacher. If unaccompanied the charge for admission is 1d. to a first-class bath, and ½d to any second-class swimming bath. Under these facilities 405,000 scholars—boys and girls—were granted free admission, and 217,000 were admitted on payment.

Three years ago the Corporation of Newcastle-on-Tyne contributed largely towards the satisfaction of a want, long urgently felt, by the completion of the City Hall and Public Baths in Northumberland Road. Erected to the design of the architects, Messrs. Nicholas and Dixon-Spain, F.R.I.B.A., Mr. Stanley Miller secured the contract for the work. The handsome range of buildings comprise the City Hall and its dependencies, and the public baths, with swimming pond, slipper baths, Turkish bath and laundry. On every hand it is admitted that the scheme is an example of intense economy in planning. In the men's swimming bath hall the pond has a water area of 100 ft. by 37 ft. by 8 ft. at the deep end and 4 ft. 6 in. at the shallow. For additional dressing accommodation there is a spacious open annexe which forms a tea-room when the pond is not in use, with lift service to a kitchen below. Messrs. Royle's filtration plant is in operation and maintains the water in the swimming ponds at a high standard of purity. First introduced to Newcastle-on-Tyne in the Public Baths, New Bridge Street in 1910, and twelve years later in the Benwell Baths, the two sets of Messrs. Royle's plant used at Northumberland Road since 1927 continue to afford satisfaction. Water is drawn from the deep end of the bath by centrifugal pumps through a strainer which collects all the coarse matter; thence it is forced to an open-air aerator, the chemicals being injected on route. Passing through open trays, the water becomes thoroughly oxygenated. By gravity it falls to the filter, where it is freed from solid matter. It then passes to the heater, where heat lost during its previous passage is restored. At this point a regulated dose of chlorine gas ensures sterilisation

Turkish Suite.

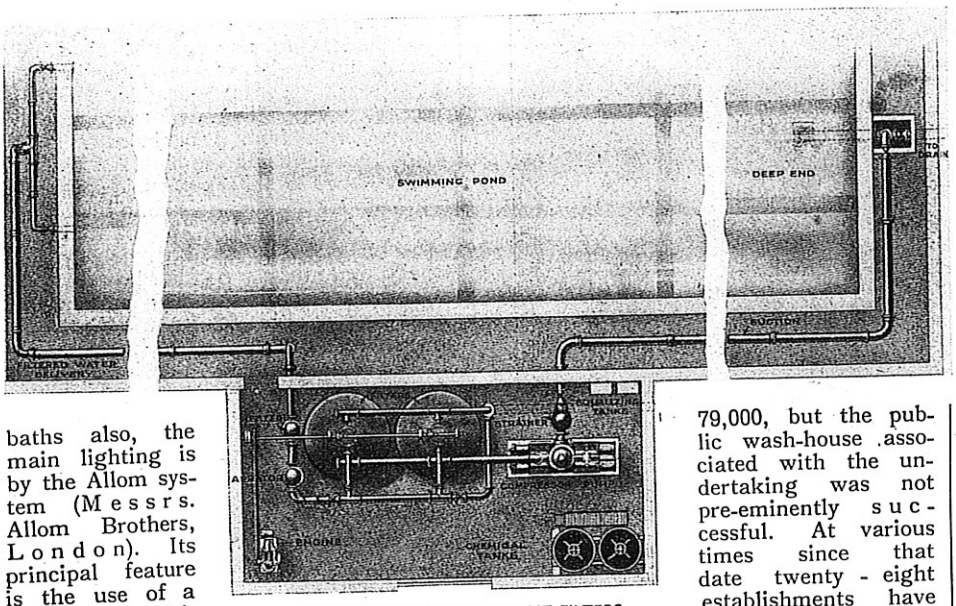
In the ladies' swimming bath hall the water area of the pond is 75 ft. by 32 ft., with depths of 6 ft. and 4 ft. 3 in. at the deep and shallow ends respectively. Slip-per bath accommodation is for six first class, for each sex, and twelve second class. Though of necessity limited in capacity, the Turkish suite is a model of its kind. Instead of being thrust away in the basement, so often the case with Turkish baths in this country, the suite shows deliberation in design. The cooling room has ten double cubicles, while the shampoo has four slabs. There are three hot rooms and a Russian vapour room.



DANKS' ECONOMIC DRY-BACK BOILER.

At Newcastle-on-Tyne the air supply or the Turkish baths is taken in at 0 ft. from the ground level and passed hrough the water spray chamber, vhere it is cleansed of impurities. It ıext passes to the battery chamber. Each ıot room has its own heater battery. The ıir is then distributed to the point where t is required in place of vitiated air, vhich is abstracted by means of ducts.

Throughout the City Hall and the baths also, the main lighting is by the Allom system (Messrs. Allom Brothers, London). Its principal feature is the use of a reflector with many sections of mirrored glass, their curves and width designed and constructed according to the shape and strength of the beam of light required. As a lighting system it overcomes many difficulties generally experienced in large halls and extensive areas, whilst incongruous fittings can be dispensed with. Those enemies of clear vision, glare and dazzle, are eliminated. In the main bath hall and in the entrance vestibule the system achieves a notable success.



ARRANGEMENT OF BELL'S PATENT FILTERS.

In the construction of the City Hall and Baths the following firms were in co-operation :—

CONTRACTORS : Builder, Stanley Miller, of Newcastle.

SUB-CONTRACTORS : Structural steelwork, Redpath, Brown and Co., Ltd., Edinburgh; bath plant, heating and ventilation, Young, Austin and Young, London and Leicester; reinforced concrete consultants, Mouchel and Partners, London; fibrous plaster, H. H. Martin and Co., London and Cheltenham; electrical installation, Falconer, Cross and Co., Ltd., Newcastle; indirect lighting fittings, Allom Bros., London; terrazzo, T. Rowell, Ltd., Newcastle, and Diespeker, Ltd., London; marble work, Anselm Odling, London; bath linings, Leeds Fireclay Co., Wortley, Leeds; slating, Dawber, Townley and Co., Darlington; sanitary fittings, J. R. Venning and Co., London, and Shanks and Co., Newcastle and London; tiling, G. Spence, Newcastle; insulation, Newalls Insulation Co., London; steel sashes and lantern lights, Williams, Gamon and Co., Ltd., Chester; steel ceiling light, Crittall Manufacturing Co., Braintree; balustrades, M. Aynsley and Sons, Newcastle; ironmongery, N. F. Ramsay and Co., Newcastle and London, and M. Aynsley and Sons, Newcastle; pavement lights, Haywards, Ltd., London; service lift, Smith, Major and Stevens, Northampton; hoist, Medways, London; seating, Waring and Gillow, London; dance floor, Francis Morton, Jnr., and Co., London; filtration plant, Royles, Ltd., Irlam.

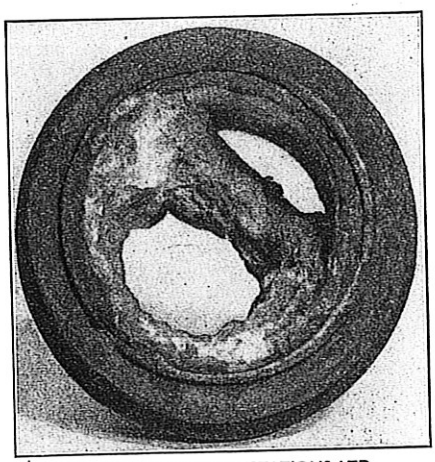
The movement began in Birmingham in November, 1844, when a Public Baths Association was formed, the support on which it was based materialising in a subscription of £4,400 for the provision of public washing facilities. Four years later the interests of the Association were vested in the Town Council, and the buildings, after enlargement, were reopened in 1851. During their first year the attendance of bathers numbered nearly 79,000, but the public wash-house associated with the undertaking was not pre-eminently successful. At various times since that date twenty-eight establishments have been erected by the Birmingham Town Council, the capital cost exceeding £515,000. In the year ending March 31, 1931, the income of the Department from all sources amounted to £32,000, its expenditure, including loan charges, to £106,000. About a million persons attended the first and second-class swimming baths; 460,000 utilised the private baths, and 255,000 the cottage baths —a class of establishment originally consisting of a cottage in which a boiler, a few wash baths and private baths were either fitted or added. This system is practically confined to Birmingham and Bradford. It is worked with a minimum staff and at little expense, and has enabled the introduction of admission charges on scales exceptionally low. The cottage baths of Birmingham are generally in the districts where the older and poorer type of dwellings are still found in considerable number. In the same year 37,000 persons used the open-air baths under the Corporation's control, and 15,000 the Turkish and Russian baths.

Owing to inadequate support, at the end of 1931 the Council decided to close the public wash-house at St. George's Street, Hockley. The Sparkhill establishment was opened on July 29 last, the cost of construction and equipment being £36,000. This new establishment embodies many new features. The dressing boxes are located outside the swimming hall, a plan also adopted in the new bath at Armley, Leeds. The system of continuous filtration combines aeration and chlorination in a satisfactory manner, and one especially pleasing feature is the arrangement of coloured glazed bricks throughout the establishment generally.

Mr. R. Hoggins, the Superintendent, Engineer and Secretary of the Department, is a specialist in the engineering aspects of the service. He states that the water of all the indoor baths is maintained at a temperature from 74 deg. F. to 76 deg. F., and the hall at about 63 deg. F. to 65 deg. F. It is the experience of Birmingham that on very hot summer days the attendances at swimming and wash baths are increased by 30 per cent. to 40 per cent., when compared with a cool fine day. A consistently warm summer therefore accounts for an increased attendance of about 20 per cent. Some five or six years since Mr. Hoggins became interested in the wave producing mechanism installed in the baths in Luna Park, Berlin, and at Mannheim. It had been proposed to introduce a feature of that character into the larger baths at Birmingham, and a deputation of the Birmingham Baths Committee visited Germany for purposes of inquiry. Later it was decided that the wave, as created under the German system, was so formidable as to be likely to render the bath unsafe except for good swimmers, with the result that its utility would be reduced, more especially for children and young persons. In Germany this view appears to be accepted, inasmuch as at Mannheim, for example, the wave is only in operation on one day weekly. In the Committee's view, to introduce the machinism to create the wave on certain days only would have entailed considerable expenditure on a plant and staff that would not be fully occupied.

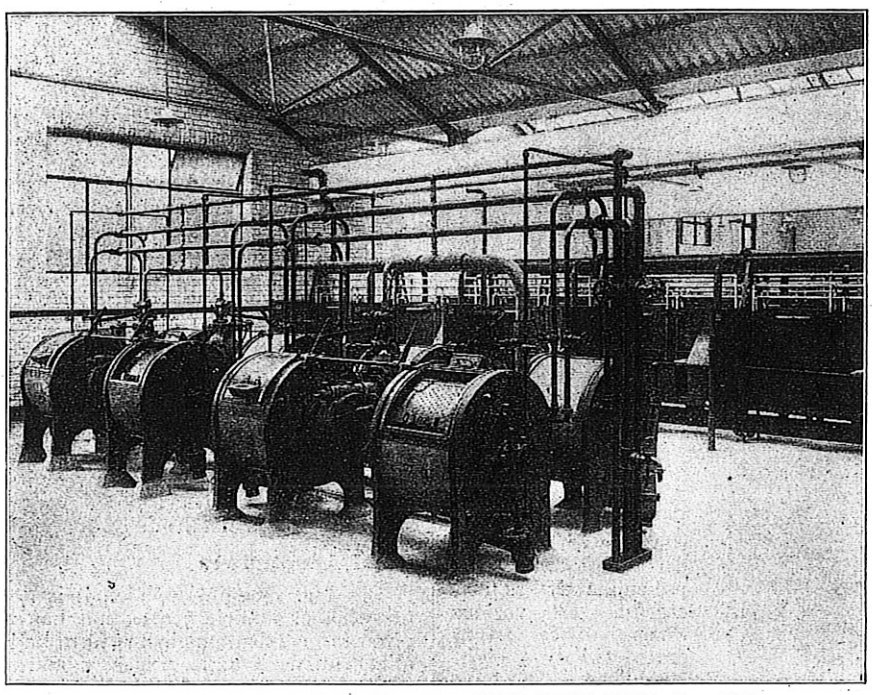
Local Adaptation.

In Mr. Hoggins' opinion it is doubtful whether sufficient attention has been given to modifications in the form and administration of baths which should vary with the nature of the locality in which they are placed. He calls attention to the attendance at public baths in relation to population. In most places the average attendance by each person is twice in the course of a year. Here is a problem on which Mr. John A. Davenport, of Liverpool, has also been recently engaged. In a paper read to the Association of Baths Superintendents at its Blackpool Conference, May, 1928, Mr. Hoggins considered in detail whether the facilities provided by a local authority should be offered at one central establishment, or be decentralised. On the whole he favours the latter course and the provision of less pretentious buildings in several districts, so that the resources of the Department shall be within easy reach of the largest possible number. This policy is in furtherance of the cottage system already referred to in connection with Birmingham.


A PROBLEM FOR INCRUSTATIONS LTD.

On matters of engineering Mr. Hoggins has much to say of interest to his fellow superintendents. Where the water supply is received from a borehole on the site he contends that local conditions and depth must determine whether it shall be pumped by air lift, bucket and plunger, or

centrifugal pumps. While the borehole supply is suitable for swimming baths it is not so desirable for washing baths, owing to its hardness and the deposit which it leaves on boilers and piping if not adequately treated. Many town supplies are surface water collected from mountains, and after treatment they



WASHING MACHINES, KIRKSTALL ROAD, WASH-HOUSE, LEEDS. (Page 638.)

usually contain less solids than borehole supplies. Nevertheless, they frequently contain peat or algea which contributes colour. Hence their relative unsuitability for swimming baths unless they are treated by chemicals and filtration.

With regard to the position of the hot-water system, Mr. Hoggins' view is that both on grounds of efficiency and service it should be placed in basements, immediately under the washing baths; and that the control of water to the washing baths should be directed from inside a bath-room and not from an outside corridor. Several cases of scalding have occurred due to this latter arrangement, with subsequent claims for compensation. On the other hand, every Superintendent must appreciate the dangers of the position where a bather is deaf, or unable to respond to instructions from the corridor.

Heat and Cost.

In regard to methods of heating the water much has been said for the economy of low-pressure heating, but in connection with most units the cost of electricity for driving the pumps for circulating the water should not be disregarded. Where swimming bath water is maintained by a filtration plant and heated by circulating the water through a calorifier heated direct from low-pressure boilers, difficulties would arise should the filtration plant break down. In that event no means would exist for emptying and refilling a bath during the night unless the whole of the plant, pumps and calorifiers were made for a maximum possible condition. Compared with the methods applied with high-pressure boilers, the cost would be altogether out of proportion. On the question of purification Mr. Hoggins contends that where the swimming bath water is in circulation, as is the case with filtration, adequate protection against infection can always be given by the appropriate use of chlorine or other chemicals. Where filtration plants are not provided an amount of liquid chlorine should be added to the water periodically, in quantities up to .5 parts per million. At night, when bathing is at an end, the quantity may be increased to 1.5 parts per million, but care should be taken to spread the substance well about the pond in the absence of circulating pumps.

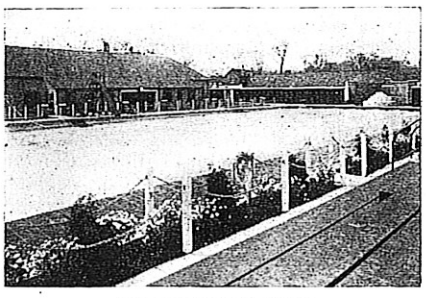
This rapid survey of a few of the establishments under the control of some of the principal Baths Authorities should be encouraging. The public bath is an important element in the growing view that the amenities and accessories of life should be planned to increase the general welfare. In that task the Baths Engineer and Superintendent play a part that is not inconspicuous.

A description of a boiler suitable for public baths and laundries as " economic" is calculated to gain attention forthwith, and by way of living-up to that title the installations of Economic Boilers by Edwin Danks and Co. (Oldbury), Ltd., have met with considerable success. Economical in regard to the floor space required, these boilers perform the same evaporated duty as an ordinary Lancashire boiler demanding twice the floor space. Brickwork setting is not required, which allows for easy and rapid fixing, but greater efficiency may be obtained by setting in brickwork. Rapid as steam raisers, costs compare favourably with any other type of steam generating plant. The boilers are very accessible for cleaning and do not call for attendance at high standards of skill. Boilers of two types can be designed for working pressures from 60 to 250 lb. per sq. in., and other duties from 1,000 to 10,000 lb. hourly. Messrs. Danks and Co. also manufacture dished and flat-ended Lancashire boilers for pressures up to 250 lb. per sq. in.

As the Baths Superintendent and Engineer is only too well aware, the efficiency of many types of apparatus is reduced by incrustation. Boilers and water tanks are special subjects of his care in this respect, and from time to time various means of removing those deposits have been placed on the market for his aid. Incrustations, Ltd., 77, Grosvenor Road, London, S.W., claim that their product, " Solvene," is a mixture of acid and metal salts, variable according to the nature of the deposits to be treated. Before " Solvene " is applied a deposit of the sample to be treated is examined by Incrustations, Ltd. The proper formula is then prepared, and it is claimed that the reduction of the incrustation to a fine sludge, in which form it can readily be flushed out, may be relied upon. The approval of many engineers acting for local authorities, Government departments, and large industrial undertakings, has been gained for this product of striking utility.

The British Carbo Union, Ltd., 52, Grosvenor Gardens, operates in a field opened up by Lourens and the brothers Dr. Adler. Their propaganda, it will be recalled, was for the use of hydraffin active carbon for the removal of chlorine.

In public baths the object of chlorine treatment is to destroy possible sources of infection which are carried into the bath in the form of skin cream, perspiration, and other rejections of the human body. Its application must be regulated so that residual chlorine cannot remain in the bath. Many baths in this country are the subject of criticism because the chlorine remaining in the water is injurious to the eyes, and causes inflammation of the mucous membrane in sensitive bathers. Moreover, the quantity of chlorine should vary with the temperature of the water, the number of persons using the bath, and the character of the feed of fresh water which necessarily varies with the seasons. Many other factors enter, and since the margin between the minimum and maximum dose of chlorine is so small, it would seem that the range for the application of remedial apparatus is extensive. Furthermore, as later biological research has shown, bacteria has a faculty for adaptation like all other living organisms; and by adjustment bacteria can survive in water containing residual chlorine. The method advocated by the British Carbo Union may be described as the super-chlorination of circulated water, followed by the removal of the excess chlorine by active carbon. The system of excess chlorination followed by dechlorination has now been known for several years, and abroad its application to several water supplies has been attended with striking success. Let it be supposed that 0.6 mg. of chlorine per litre be added instead of 0.3. It is certain that the germs in the bath water will be destroyed, since there is no evidence of capacity for adjustment-survival where the water is so heavily charged. Nor can the variable capacity of the water itself for the assimilation of chlorine defeat the purpose of its introduction when the chlorine concentration is so high. Under the British Carbo Union's system, after the water has been exposed to excess chlorine for a sufficient time to destroy germs and organic substances, it is passed through a sand filter, and next through hydraffin carbon, at which stage excess chlorination is removed. It is claimed that the apparatus can be so adjusted that the affluent water is either wholly free of chlorine or retains a slight residual concentration only. F.



WEMBLEY U.D.C. BATH, CANDY FILTER CO., PLANT.